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REDUCTION OF ABDOMINAL SCALES OF THE
MONARCH BUTTERFLY IMAGO
AS A RESULT OF CAUTERIZING
THE Abd PPM OF THE PUPA

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IT HAS BEEN PREVIOUSLY DEMONSTRATED that if the LN PPM of the pupa of the monarch butterfly is cauterized the scales of the forewings of the imago exhibit marked reduction in pigmentation; if the MO PPM is cauterized there is a marked reduction in the number of scales on the head (Urquhart and Tang, 1970).

As a follow-up to the above experiments, the Abd PPM (Fig. 1), which PPM extends across the dorsal surface of the third abdominal segment, was cauterized for one half its total length—it was found that if the entire PPM was cauterized then the imago was unable to free the abdomen from the pupal exuvia.

The Abd PPM of 25 pupae were cauterized and of these, 7 indicated no discernible reduction in the number of abdominal scales (Fig. 3); 6 indicated a noticeable reduction on the 8th and 9th abdominal segments; and 5 indicated a marked reduction, particularly on the dorsal surface (Fig. 2). Seven imagoes failed to completely eclose owing to the adherence of the abdomen to the pupal exuvia.

Twenty-five specimens were used as controls in which areas remote from the Abd PPM, but still in the abdominal region, were cauterized and of these 18 eclosed with no discernible reduction in the number of abdominal scales; 7 failed to eclose.

ACKNOWLEDGMENT

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The photographs were taken by David Harford, technician at Scarborough College.

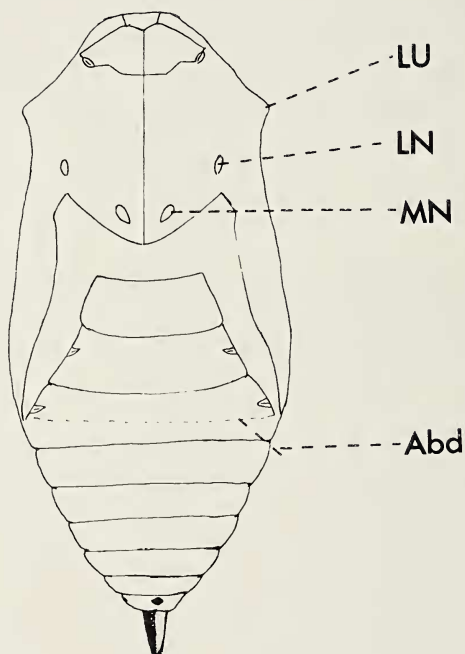


Fig. 1.—Dorsal aspect of the monarch butterfly pupa showing the position of the Abd PPM (see "literature cited" for designation of the other PPMs).

LITERATURE CITED

- URQUHART, F. A., and TANG, A. P. S., 1970. The effect of cauterizing the PPM ("gold spots" of authors) of the pupa of the monarch butterfly (*D. plexippus*). *Jour. Res. Lepid.*, 9(3): 157-167.



Fig. 2.—Absence of scales on the dorsal surface of the abdomen as a result of cauterizing the Abd PPM. (Note: Abdominal shrinkage was not associated with this treatment—shrinkage, as in any dried specimen, exhibits marked variation.



Fig. 3.—Control specimen indicating no decrease in abdominal scales.